

DENVER PC BOARDWATCH

NEWSLETTER FOR ELECTRONIC BULLETIN BOARDS AND ON-LINE SERVICES

Editor: Jack Rickard

Volume II: Issue 6

ISSN: 0894-5209

July 1988

TELE-BITS

THE BBS LIST

This month **Denver PC Boardwatch** presents a list of **198** bulletin boards/on-line services available in area code **303** - see page 12. A total of **14** BBS were deleted from the May list with **14** additions. As always, each number is verified by actual telephone contact within the last **30** days. Additions and major changes to the list are highlighted in bold-face type. Corrections or comment may be addressed via the **Denver PC Boardwatch** Echomail Conference, by Fidonet Mail addressed to **MARION RICKARD** via Net **104** Node **30**, **JACK.RICKARD** on the General Electric **GENie** information service, or **71471,561** on Compuserve.

SEND FAX VIA AT&T E-MAIL

American Telephone and Telegraph announced a new feature for their popular E-Mail service allowing subscribers to send messages to facsimile machines anywhere in the world. The new feature, titled **MAIL-FAX**, allows users to send messages by entering **FAX** followed by the telephone number in the message address header. Rates are **\$0.95** for the first page and **\$0.80** per page thereafter. The mail service costs **\$30** annually with a per message fee as well. AT&T E-Mail, PO Box 3505, Brunswick, NJ 08903; (800)624-5672.

CRAY RESEARCH TO OPEN SPRINGS PLANT

Cray Research Inc., intends to manufacture its **CRAY-3** supercomputer in an automated facility in Colorado Springs beginning in 1990. The company is buying the **128,000** sq. ft. **INMOS** plant in Cheyenne Hills. The plant should bring several hundred jobs to manufacture the new machine, rumored to be capable of **16** billion instructions-per-second. Manufacture of other models will continue in the current Chippewa Falls Wisconsin facility. Neil Davenport will serve as head of the Colorado Springs operation. Cray Research, Inc., 608 Second Ave. South, Minneapolis, MN 55402; (612)333-5889.

EVEREX ANNOUNCES SIX-MIPS PC

Everex Systems has announced a **25 MHz** PC titled the **STEP 386/25** they claim is capable of executing six Million Instructions Per Second (MIPS). The unit features the **INTEL 80386** microprocessor and an advanced cache memory system to speed operations.

The company also introduced a **STEP 286/20** which is one of the early arrivals using the new **INTEL 20 MHz 80286** chip capable of approaching four MIPS operation. This will make their **20 MHz** machine faster than many **80386** based units on the market. Everex Systems, Inc., 48460 Kato Road, Fremont, CA 94538; (415)683-2491. You can see the Everex **STEP 386/20** model in action at Denver Tech Computers, 6801 South Dayton, in Englewood.

MAXTOR ERASABLE COMPACT LASER DISK

Tandy announced an erasable compact laser disk just this past April noting it would likely be **24** months before a PC product would be available. Maxtor has upstaged Tandy just a bit by announcing two CD products at the Spring **COMDEX** in Atlanta during May. Ostensibly the drives will be available by the end of 1988. A **160 MB 3.5-inch** model will cost **\$2000** while a **5.25 inch 1 Gigabyte** unit runs about **\$6000**. The access times on the large unit runs a very impressive **30** milliseconds. Maxtor Inc., 211 River Oaks Parkway, San Jose, CA 95134; (408)432-1700

PC PURSUIT EXPANDS TO 33 CITIES

Following the recent reprieve granted enhanced service providers by the FCC, Telenet has announced several improvements to their popular **PC PURSUIT** long distance program. **PC PURSUIT** allows data communications enthusiasts to dial into BBS located in **25** cities during evening and weekend hours for a flat **\$25** monthly fee. The service will now be expanded to **33** cities adding Hartford CT, Kansas City MO, Palo Alto CA, Riverside CA, San Diego CA, St. Louis MO, and Santa Anna CA. Additionally, almost all cities will feature **2400 bps** service by the end of the year. Many users have complained of the inability to gain a line during peak periods. Telenet plans to alleviate this by adding more lines to the service - in some cases quadrupling current capacity.

Two bulletin board systems provide information on the PC Pursuit service. Users can dial the toll-free **IN PURSUIT OF** service at (800)835-3001 to view a brief data commercial on the service as well as announcements concerning access cities and additions. More detailed information including logon scripts for various communications software packages, discussion, and questions can be directed to the **PC PURSUIT BBS** at (703)689-3561. To sign up for the ser-

vice, dial (800)835-3638. There is a \$25 sign-up fee in addition to the first month's \$25 charge. To list available Telenet numbers, set comm parameters for 7 data bits, Even parity, and 1 stop bit (7E1). Dial (800)424-9494. At the @ prompt enter MAIL. At the resulting USERNAME: prompt enter PHONES and at the PASSWORD: prompt enter PHONES again. The resulting menus will allow you to list Telenet numbers by state or area code.

USA TODAY NEWS ON LOCAL BBS

In a pioneering experiment in news distribution, Gannett New Media has been providing **USA TODAY** newspaper to Denver area BBS. The experiment, which began April 1, now includes a round dozen Denver area BBS. Each system pays a monthly fee of \$12 to receive the newspaper each weekday morning by 8:00 AM. The boards post the newspaper on-line, allowing their users to view the newspaper at no charge.

The newspaper is presented in 18 topical categories. Most of the participating systems have developed attractive menuing systems allowing users to easily select and read those topics of interest. One local BBS, **TERUS REGUSER**, has married the product to their **MINDS** text retriever, a text indexing product similar in function to ZylIndex or Gofer. As a result, users can enter search keywords and instantly access those news items of interest from the newspaper.

According to several local sysops, the electronic newspaper is developing a following among users with some individuals dialing up each day to read the morning paper. The list of BBS shown below currently carry the newspaper on-line.

USA TODAY	
BBS	PHONE
COMM-NET	340-2473
CYBER-ZONE	860-0126
DAY'S END	650-5636
DENVER TECH COMPUTERS	799-4813
INVESTMENT LOUNGE	759-3721
MICROLINK B	972-9600
NONAME BBS	988-5765
ON-LINE CONSULTING	449-5251
PCJR-NET	789-4610
PHOENIX TBBS	841-9570
TERUS REGUSER	341-1404
THIS END UP	430-1585

HAYES ISDN PC CARD

Hayes Microcomputer Products, Inc. is currently delivering their **ISDN PC Card**. The card allows PC owners to connect to the emerging **ISDN** telephone networks currently under development by Southern Bell, NYNEX, Southwestern Bell, Ameritech, and other regional Bell companies. So far, there is no word from Mountain Bell on when they might introduce Integrated Services Digital Network (**ISDN**). **ISDN** allows extremely high speed data transfers (64 kbps) and simultaneous data/voice transmission over very clean digital quality lines in a switched network. This eliminates the need for modems to convert digital data into aural tones. In fact, your current analog telephone will not work at all with **ISDN**. Voice transmissions will be much higher quality but strictly digital in transmission. The Hayes card works in any IBM PC or close compatible and provides a modular **RJ11** jack for connecting a standard analog phone set. The Hayes card does the analog to digital conversion to allow existing telephones to work over the **ISDN** network as if they were the much more expensive, and at this point, rare - digital sets. Hayes provides telecommunications software to use the **ISDN PC Card** much like a modem. Hayes President Dennis Hayes said "Our **ISDN PC Card** works in much the same manner as a Hayes Modem while taking full advantage of the increased capabilities **ISDN** provides." Apparently, using the card and software, it is possible to simultaneously download software/files from two separate sources. David Deems is **ISDN** Relationship Manager. Hayes Microcomputer Products, Inc., 705 Westech Drive, Norcross, GA 30092; (404)449-8791.

STOCK MARKET NEWS

A 900 number service provides 24-hour financial news. The service, termed **MoneyCALL**, operates at (900)660-CALL. The 900 service operates much like a local 976 Scoopline. Charges are \$1.50 for the first minute and \$0.35 for each minute thereafter and they will appear on your telephone bill quite automatically. The service does provide a fairly up-to-date and concise financial news summary for those on the go.

CELLULAR CAR FAX

FAX mania continues to sweep the country and soon you'll hardly be able to do business without one. Dataquest claims that 417,000 units sold last year. Now, a Beverly Hills mail-order firm is offering a 14-lb portable **FAX** that operates from your car using your cellular telephone. Power is obtained from the cigarette lighter. The NEC Portable Car FAX is priced at \$2410 plus \$15 shipping. Beverly Hills Motoring Accessories, 200 South Robertson Blvd., Beverly Hills, CA 90028; (800)421-0911.

CENSUS DATA ON DISK

Public Brand Software has provided a shareware disk mailing service since 1985 and currently sports 11 full-time employees. Their current library contains 302 disks of public domain/shareware software available in 5.25-inch (\$5 each) and 3.5-inch (\$6 each) disk formats. Additionally, there is a \$5 per order UPS shipping fee and all orders go out on the following business day. Significantly, the service offers a 14 disk set containing the 1980 city/county data book in archived format. This same information is available on 44 diskettes from the Department of Commerce Census Bureau at \$600. Public Brand Software offers the entire set for \$60 or individual disks for \$5 each. Disk 1 is required and disk 3 contains data for Arizona, Colorado, Idaho, Nevada, New Mexico, Montana, Utah, and Wyoming. The disks contain 72 individual comma-delimited ASCII files per state listing land area; population by race, age, sex, marital status; households; births; deaths; occupations; crime statistics; marriages; divorces; education; income; taxes; and weather. Over 300 items are provided per county with some state summaries as well. Public Brand Software takes pains to point out that their order line was not (800)IBM-DISK since they've had some legal difficulties over this. We found that it worked nonetheless. Public Brand Software, PO Box 51315, Indianapolis, IN 46251. Call for a free catalog.

NYSE DIRECTORY ON DISK

Demand Research Corporation currently offers a mailing list database of every domestic company listed on the New York Stock Exchange. The product is updated weekly. The files we received on May 27 were dated May 24. The directory also contains the Chief Executive Officers name as well as that of the Chief Financial Officer for each corporation. The disk is priced at \$18 and delivery is actually quite prompt. The file was 213,962 bytes in size in a comma-delimited ASCII text format that is very easy to import into dBase, R:base, or other popular database programs. Demand Research Corporation, 625 North Michigan Ave., Chicago, IL 60611; (312)664-6500.

HAYES MODEM DISCOUNTS FOR SYSOPS

In recent months, US Robotics has been enormously successful in using its sysop discount program to leverage itself into an enviable position as "the standard" 9600 bps modem in the BBS community. In the Denver area, if you want to talk to a BBS at 9600 bps, you'll find 15 BBS running the USR HST 9600 model and two boards running a Microcom 9600. If you buy a 9600 bps modem of any other manufacture, you'll likely wind up talking to yourself. As it stands now, 9600 bps modems in the affordable range can't connect to any other model modem at 9600 bps. They

must fall back to 2400 bps to "cross over" to a different manufacturer.

USR has established a tenuous defacto standard among hobbyists by offering system operators a hefty 50% discount on their USR HST 9600 unit. This brings the normally excruciating \$995 price down to a more persuasive \$500 delivered.

Hayes Microcomputer Products has heretofore been the king of the hill in modem manufacture. Modem makers who do not claim 100% Hayes compatibility usually wind up claiming bankruptcy. In two years of testing dozens of modems, we haven't found a 100% compatible yet. Yet Hayes modems are not popular in the BBS community. Quality and reliability remain unquestioned but the price is widely regarded as "out of line". Until recently Hayes largely ignored the hobbyist market and had ceded 9600 bps operation as well to younger, hungrier companies like USR.

Now Hayes has introduced a 9600 bps V-Series modem at \$1299. Although still nearly a third more expensive than the USR model, Hayes 9600 employs a LAP-B (Link Access Protocol - Balanced) protocol quite naturally compatible with the link portion of the established X.25 packet switching protocol used on such services as Telenet, Tymnet, and Compuserve. And Hayes seems to be quietly moving to woo the sysop as well. They've established a toll-free 800 WATS BBS for dealers and participating sysops. Qualified operators can also purchase up to four Hayes modems at very nearly a 50% discount. To qualify, your BBS must have been up for at least six months, receive a minimum of 200 calls monthly, and have some connection to a "specific group". We're not certain what the latter qualification is all about. Some sample models are shown below:

HAYES SYSOP PRICING		
MODEL	LIST PRICE	SYSOP
V-Series 9600	\$1299	\$655
V-Series 2400	\$899	\$455
Smartmodem 2400	\$599	\$305

John Aitken is project coordinator for the Hayes sysop program. Hayes Microcomputer Products, Inc., 705 Westech Dr., Norcross, GA 30092; (404)662-7100.

NEW MICROCOM QX MODEM SERIES

Microcom Inc. has announced three new modems and two new levels of their industry standard Microcom Networking Protocol (MNP). The new class 8 and class 9 levels further extend the data compression and error checking capabilities of the MNP standard. The new QX modem series features some dramatic throughputs using the new MNP levels. The QX/12K is

a **V.22 bis** modem which is traditionally thought of as a **2400 bit-per-second (bps)** modem. With the new **MNP**, the **QX/12** runs data out at an effective **12,000 bps** and prices out at **\$799**. The **\$1499 QX/30** is a **V.29** standard modem analagous to the **Hayes 9600** or **US Robotics HST 9600** though technically not capable of communicating with either. The **QX/30**, working in tandem with a second **QX/30**, is capable of data throughputs of **30,000 bps**. Finally, the **QX/V.32** is, as the model number implies, a true **V.32** full duplex **9600 bps** modem. Using the **MNP** feature, the unit will squirt bits at a whopping **38,400 bps** over standard dial-up telephone lines. Currently, that's as fast as it gets over ordinary telephone lines. The **QX/V.32** makes the trip for **\$1799** - relatively modest as full **CCITT V.32** modems go. Microcom Inc., 1400 Providence Highway, Norwood, MA 02062; (617)762-9310.

NEW PC MAGAZINE ON-LINE SERVICE

The May 31 issue of **PC Magazine** announces inauguration of a new on-line service titled **PC MagNet**. The new service uses the Compuserve telephone network - including all Telenet and Tymnet nodes for access and the service is actually administered by Compuserve. More than **300** local telephone numbers are available throughout the US to access this network. The net can be reached from any metro Denver exchange at (303)629-5563. The service is priced identically to Compuserve at **\$12.50** hourly for **1200 bps** and **\$6** hourly for **300** (is this a joke?) **bps**. Existing Compuserve subscribers can access the new service by entering **GO PCMAGNET** at any prompt. For those who don't subscribe to Compuserve, and for those who don't necessarily plan to, a **PC MAGNET** on-line signup process is available. Dial the local number and make the following entries.

PROMPT	ENTRY
HOST NAME:	CIS
USER ID:	177000,5000
PASSWORD:	PC*MAGNET
ENTER AGREEMENT NUMBER:	Z10D8810

You will be asked to charge your account to MC/VISA. The connect-time to go through the subscription process is free. **PC Magazine** had operated a BBS termed an **Interactive Reader Service**. The **IRS** had proven quite popular growing to **8 AT** class machines and **44** telephone lines - most busy on a more or less continuous basis. The new service has virtually unlimited access, nearly all files ever described in **PC Magazine**, and interactive forums featuring regular columnists like **John Dvorak** and **Jim Seymour**. **PC**

Magazine, One Park Ave., New York, NY 10016; (212)503-5255

TELEPHONE RATE SOFTWARE

Suresoft Inc. is distributing a program titled **Teledoll-Plus**. Enter your last month's or years' long distance data from previous bills and the program calculates which of **29** long distance carriers will be least expensive for you. If you're making a lot of long distance calls, it probably would not take long to recover the program's **\$89.95** price tag. Suresoft Inc., 1311A Dolley Madison Blvd., McLean, VA 22101; (703)893-6100.

THEY CHECK IN BUT THEY DON'T CHECK OUT

It would appear that the cockroaches are winning - at least in some areas. **Selling Areas Marketing Inc.** has compiled sales figures for roach remedies in various American cities. **Tampa-St. Petersburg** leads the pack with **\$10.6** million in sales annually. But **Houston** is doing its part at **\$8.3** million followed by **Miami** - **\$7.8** million; **Dallas-Fort Worth** - **\$5.9** million; **San Antonio** - **\$5.6** million. **Denver?** Roaches apparently don't care much for snow. We didn't even get an honorable mention. They did find three roaches out at **Stapleton International Airport**. Actually, they were retired **Florida** roaches on their way to **Seattle** for the holidays. They were held over during the **December** snowstorm and haven't made it out yet.

CALLING PARTY IDENTIFICATION

It is coming. And it will be fantastic. It's called **Calling Party Identification (CPI)** and it has been rumored for years. Essentially, it displays the telephone number, on a small LED readout, of anyone within your switching area that calls your telephone. You will be able to block calls from certain numbers. **Southwestern Bell** is doing field trials in **Muskogee Oklahoma** beginning **June 1988**. Quiet rumors and veiled whisperings abound from within the bowels of **Mountain Bell** on a similar product for **PBX** customers. No reliable word yet. **AT&T** is rumored to be working on **ISDN** and **CPI** for long distance calls.

CABLES AND SWITCHES BEYOND BELIEF

It seems everyone has an exotic LAN product or data communications gizmo these days. But what do you spend most of your real time wrestling with when it comes to connectivity? How about connections. Cables. Switches. Connectors. We were wowed recently by the latest **BLACK BOX CORPORATION** spring/summer catalog. This slick **150** page document illustrates precisely how to make a fortune in a niche market as mundane as cables and connectors. **Black Box** offers the most amazing array of cables, switch boxes, connectors, and assorted hardware and connectivity paraphernalia we've seen anywhere. A couple of examples caught our eye. An **AB** switch box

allowing you to use one keyboard to control either of two computers. Another lets you use one monitor on two systems. In fact this **AB** switch concept is provided in **RJ11** telephone jacks, **RS-232** serial connectors, parallel connectors, coaxial connectors, **V.35** data set connectors, etc. Recall from our June issue that Mountain Bell now offers the **SwitchNet 56** dataline service. It required a **Channel Service Unit/Data Service Unit (CSU/DSU)** instead of a modem to operate. The units we saw were **\$1950**. Black Box offers one for **\$750** fully compatible with **SwitchNet 56**. The company offers modems ranging from a pocket model to rackmounts. They also have cables, connectors, and even wall plates for any conceivable application. They had switchboxes that would activate appliances/computer equipment on receipt of a modem carrier and others that allowed switch control based on tones entered from a remote touch tone telephone. The catalog also provides some marvelous explanations of various interface standards and communication terminology. If you are involved with PC communications, this book - virtually an applications guide - desperately seeks a spot on your bookshelf. Grant it one. Black Box Corporation, PO Box 12800, Pittsburgh, PA 15241; (412)746-5500.

OSI CLOSER TO STANDARD

Twelve heavyweight computer technology vendors have announced virtually immediate support for the **Open Systems Interconnection (OSI)** standard for interface between computer equipment. **OSI** incorporates the **Integrated Services Digital Network (ISDN)** telephone standard currently under development at virtually all the regional bell operating companies. Through these standards, computers will be able to communicate at unheard of speeds allowing wide-area networks sprawled across the nation to operate much as **Local Area Networks (LANs)** in office environments do today. The difference will be that there are many **LAN** standards and as of this announcement, one **WAN** standard.

The final push for **OSI** adoption came from the Federal Government. The Government Office Systems Interconnect Profile (**GOSIP**) program requires **OSI** based products after June 1988 with a two year phase-in culminating in a ban on all non-**OSI** products in 1990. All twelve companies said they would demonstrate initial **OSI** products at the Enterprise Networking Event '88 International held in Washington June 6th through 9th. The twelve companies include IBM, AT&T, Digital Equipment, Hewlett-Packard, Data General, Control Data, Honeywell-Bull, Sun Microsystems, Xerox, Wang, and Telenet, and Unisys representing over 3/4 of all computer products and services sold in the US.

COMM PROGRAM FEATURES MNP PROTOCOL

Microcom Inc. has, for the most part, established the standard for file transfer protocols implemented in hardware. More and more vendors are including support for the public domain levels (1-4) of the Microcom Networking Protocol (**MNP**) within the circuitry of their modems. **MNP** provides data compression and error correction algorithms to increase the apparent speed and reliability of file transfers between modems featuring the protocol. Although this requires but an additional **\$15** in components and no license fee at all, vendors typically mark up the **MNP** feature **\$100** to **\$150**.

MagicSoft Inc. has implemented the **MNP** standard in software. They offer a **\$59** communications program titled **MTE (MNP Terminal Emulator)** that makes your low cost modem appear to all the world to be equipped with **MNP** level 4. Level 5 **MNP** should be available within 30 days at a cost of **\$79**.

The program purports to be keystroke compatible with the popular ProComm communications package by DataStorm of Columbia Missouri. It does not support the script language however. Donavon Kuhn developed the **MTE** program based on his experience at US Robotics where he did the **MNP** implementation for the Courier model. MagicSoft Inc., 125 East Prairie, Lombard, IL 60148; (312)953-2374.

LOCAL ACCESS

COMMODORE 64 LIVES ON

Jon Almon of Aurora maintains a basement full of bulletin board system primarily devoted to Commodore **C-64**, **C-128**, and more recently, the Amiga computers. The system is called **COMM-NET** and you really need to see it to believe it. The board runs on **FIVE** lines using five **C-64** units accessed via **US Robotics Password** modems. The computers are networked together to a file server made up of three **20 MB** hard drives and some bizarre multiplexing equipment. All the BBS software is custom designed by Jon and his band of merry men. The system has been in operation since December 1983 and currently claims an average of **8000** telephone calls monthly. The operation is really more than a BBS - offering full repair service, hardware, supplies, custom programming and duplication services, and probably the best Commodore support in the area. The outfit even markets a communications package for Commodore machines titled **COMM-PAC MARK IV** that includes a powerful script language. Although access is free and open to the public, full use of this system requires a membership of **\$18** for 3 months, **\$29** for 6 months, or **\$49** for a full

year. The full year membership includes a free copy of **COMM-PAC MARK II** communications program - shareware predecessor to the **MARK IV** release. In addition to an immense software library, the service offers numerous informational bulletins and tidbits of interest to anyone regardless of computer type - including **USA TODAY NEWSPAPER** online. The system seems to cater to an age group ranging from mid-twenties to late thirties with a large contingent of small businessmen according to Mr. Almon. Definitely not a service for kids. Several co-sysops make sure the board has the very latest in software available for download. We stopped by for one of the Friday afternoon get-togethers that have apparently become a custom. In the course of an hour there came to be assembled as motley a crew of computer enthusiasts as we've ever encountered - gathering to have a few beers and talk shop. It was much like peering into the tree in the recent Keebler Cookie commercial featuring the **Pequenos Keebleros**. It was also reminiscent of the early days of personal computers when a certain camaraderie existed in the user groups. If you are feeling a little bit abandoned with your old **C-64** since most of the department stores dropped it, you should be in contact with this group. Commodore is alive and well in Colorado.

KINGS BENCH BBS

Ralph Allison has operated a local BBS for some time now supporting the Tandy line of IBM compatible computers. The board is known as **KING'S BENCH BBS** and operates using **TBBS Multiline** software on three telephone lines. The primary telephone number is **(303)377-6725**. The board is home to the **Compatible Computer Information Exchange (CCIE)** group. The organization is dedicated to user support for compatible computers of all types although they retain a strong Tandy element. Membership is **\$25** annually and includes expanded access to the BBS, a monthly newsletter titled **THE ROUND TABLE**, and a nice certificate of membership. The newsletter features some fairly in-depth reviews of available shareware programs and hardware. The BBS does provide some file areas but remains primarily a message board system. Participation in the message areas is strongly encouraged and discussion topics do tend to center on support issues for compatible computers. However, we participated in a recent exchange of some length on the tribulations of smoking cessation and conversations can be found on virtually any subject. Due largely to an article in the October **1987 PC Resource** magazine, Mr. Allison enjoys a fairly diverse group of users from cities all across the nation.

LONG DISTANCE USA

NAVAL AVIATION BBS

Commander John Norton and Journalist First Class Jim Richeson operate a BBS from the Navy Yard Annex in Washington DC. The board is titled **Naval Aviation News Computer Information (NANCI) Electronic Magazine** and operates at **(202)475-1973** using **TCOMM** software. Navy Airdales may be familiar with the service magazine **Naval Aviation News** and the popular Grandpa Pettibone column dissecting the errors leading up to various flight incidents. The text of articles appearing in **Naval Aviation News** is available on-line going back at least two years. The board operates from **5:00 PM to 8:00 AM (1700-0800** for the truly hard core canoe club types) and all weekend. In addition to **NAN** articles, the board also features a wealth of Naval Aviation history information. Apparently, they are also gearing up for the **75th** anniversary of Naval Aviation. The board also allows uploads of articles for the magazine. Address correspondence to Editor, **Naval Aviation News**, Bldg. 159E, Rm 512, Navy Yard Annex, Washington, DC 20374; **(202)433-4407** (voice).

TOLL-FREE DEPARTMENT OF EDUCATION BBS

Despite the negative image the federal government may enjoy in many areas, they have done very well among data communications enthusiasts. The reason is the large number of very informative free BBS run by various government agencies. This month, we found a perfect example of this in the **OERI PC BOARD** run by the **US Department of Education** on a toll-free WATS line at **(800)222-4922**. The system runs on an IBM compatible computer using **PC BOARD** software. It's physically located in Washington DC and they do have a local line as well at **(202)626-9853**. Tom Litkowski is the sysop and the board is operated primarily for the use of educators and others employed in the field of education. We found an IBM file area on the board just chock full of educational programs for children including ABC and math programs and a program to help teach small children how to tell time. For older kids, programs on State Capitols, Algebra, French, and Cantonese were available. Other file areas contained text files describing **WHAT WORKS IN EDUCATION** offering tips for educators. Perhaps the most fascinating data on this board was in a file area labelled **1987 DIGEST OF EDUCATION STATISTICS**. There, we found **261** individual text files with each file containing a table listing statistics relating to enrollment, teachers, finance, higher education, elementary education, etc. Each of these ASCII text files were produced from **LOTUS 123** source files and converting them back to **LOTUS** format should be quite easy. Some examples: a file es-

timating total enrollment in all elementary and secondary schools in the **US** for **1986**; percentage of population **3** to **34** years of age enrolled in school by age from **1965-1985**; total education spending to **GNP** **1960-1986**; Historical summary of education statistics **1869-1984**. Statistical summary of Catholic education **1919-1986**; Average annual salary of public school teachers by state **1969-1986**; Expenditures per pupil by state **1959-1985**; Median annual income by years of school completed and sex **1970-1985**. A total of **261** such files form a statistical picture of education in the **US** spanning the last hundred years in absolutely fascinating detail. If you have any interest in education or the history of education, this board comprises a veritable national resource of information available to anyone with a PC and modem - not even a long distance telephone charge. Fascinating BBS.

INTEL PRODUCT SUPPORT BBS

We recently received a letter from Mr. Al Kinney of Intel Corporation in response to an article we did on the Intel Information Service. Mr. Kinney wrote to correct our description of the Intel **Inboard/386** circuit card. It seems that while the **386** card does increase operating speed quite dramatically, it is **NOT** compatible with the new **OS/2** operating system. Mr. Kinney also remarked quite favorably on our newsletter and notified us of the availability of an **INTEL BBS** operating in Hillsborough Oregon at **(503)645-6275**. The board runs **TBBS** software on a Tandon PC over three telephone lines. The service uses one **Hayes 2400** and two **CTS Fabritek 2424ADH** modems. The board provides easy access to the latest Intel Software as well as providing technical support and discussions of Intel product use.

TOLL-FREE MCI BBS

Curtis Abrue of **MCI** operates a fascinating BBS for telephone system consultants at a toll-free **(800)873-5548**. The system provides product information, message areas for consultants, and a software upload/download section. Joan Sirlag is an MCI representative in the Denver area that works with telephone consultants. She haunts this board quite frequently. Mr. Abrue's voice number is **(202)887-2907**.

WASHINGTON R:BASE USER GROUP BBS

The Washington **R:Base User Group (WRUG)** operates a very capable BBS at **(703)620-9043**. The group is quite active in supporting the **R:Base System V** database program by Microrim. They meet the third Wednesday of each month at MITRE Corporation facility in McLean Virginia. The BBS sports a variety of utilities and application files for the commercial database program and offers a utility of the month file section as well as a file area for use by members only.

The board also features several interesting national BBS lists and an excellent list of Washington D.C. BBS.

PORTAL OFFERS 456 USENET MESSAGE AREAS

USENET is an international message conferencing network largely operating on company, government, and university computers under the Unix operating system. In many ways, it can be likened to a Unix version of the popular Fidonet mail network extant in the DOS world. Portal Communications Company of Cupertino operates an information service whose notable contribution is access to Usenet at a flat monthly fee of **\$10**. They've very recently added **174** more topical "conferences" to bring the total number of Usenet message areas to an impressive **456**. Conferences are available to support virtually every micro or mainframe computer as well as hundreds of conferences on topics as diverse as cooking and biotechnology. Although Usenet is clearly their main offering, Portal also provides PC users with access to other networks including **UUCP**, **ARPA**, and **BITNET**. Information on Portal, as well as an on-line signup function are available at **(408)725-0561** (data). Phil Sea, Portal Communications Co., 19720 Auburn Dr., Cupertino, CA 95014; **(408)973-9111** (voice).

A MEEK AND TIMOROUS WORD ON THE SUBJECT OF VIRUSES

Although one of the earliest print media to mention the current software virus phenomena, we note with some alarm the current hysteria sweeping the nation on the subject of viral infections of computer systems. We've kept our comments somewhat restrained (a tad out of character - true) pending our imminent capture of an actual virus program. They've remained ever just beyond our grasp for over four months now. The popular press has seized on this titillating story and run it into the ground to the point that the entire nation is all aflutter over the prospect of a national epidemic threatening to destroy everything from the DOD supercomputers to keychain calculators and ball-point pen digital clocks.

We monitor over **200** BBS in one of the most active data communications areas in the country. Some area system operators have been running boards for nearly five years. It is odd then, that no one has been able to actually locate a virus. In the past two months, we've first hand knowledge of a couple of suspicious Amiga/Commodore programs doing strange things on a Xetec file server whose owner and operator admits is somewhat less than reliable on its better days. Meanwhile, companies and individuals are near hysteria with many otherwise knowledgeable in-

dividuals convinced they can lose their system by the mere act of connecting to anything else via telephone and others refusing simple text files on the off chance that they might be "infected". One corporate systems director told us we could not call his computer because of the virus. He would rather call ours just to be safe. (no idea...) Every equipment malfunction that has occurred north of Caracas in the last two months is somehow linked to the dreaded if largely mythical disease. The bad news is that this is a terrible thing that's happening. The good news is - it ain't happening.

Why the hysteria? For one thing, the prospect of such a thing is so frightening that otherwise lucid individuals panic at the thought of something "infecting" a system. The system isn't so much the computer system as it is the **SYSTEM** of software, config files, text files, installation files, menus, batch files, and so on resident on a hard disk drive that may have taken the owner several years to develop. Some users aren't even sure how they built what they have exactly and are petrified at the thought of having to do it over. That a virus **COULD** exist is enough to bring on ventricular fibrillation and apoplexy - normally non-viral conditions.

Secondly, viruses are possible. On good authority, we are assured that they do indeed exist. Undoubtedly, they **COULD** exist. In fact, there is no real feat of programming required here. A simple replicating virus is just not that difficult to attach to an otherwise innocuous program. We fear that all the recent publicity has sent half the programming population in the country to the basement to design what they've read about. We know that several anti-viral product developers have produced "demos" of viruses to "demonstrate" how bad it can be. The theory of virus or worm programs has been known for years. If you are looking to plow some new ground technologically, that's not the place.

The good news is that viruses just do not seem to be available. All reports of viral activity we have tracked down recently have turned out to be trojan horse programs, or of third or fourth-hand hearsay type passed on quite fervently under the "better safe than sorry - don't say I didn't warn you" brand of good intention. The amazing thing is many of these stories appear in print and even on national television with such an utterly convincing ring of authority that it seems that every day we're at the point of having finally found one. Now just to call and confirm.....and the story begins to unravel. The closer we get to the "original" source, the more tenuous it becomes until we finally arrive at the end of the evaporative trail with about \$50 in long distance telephone charges and

someone assuring us that even though they didn't **really** have one themselves they are sure there's some out there somewhere and somebody should do something just in case.

What is a virus anyway? The BBS community has known of trojan horse programs for years. A trojan horse program purports to be some useful utility, usually a fairly well known shareware product. When loaded and executed, the program does something damaging - usually writing over the file allocation table of the hard disk drive - effectively erasing the disk. In fact, this ploy has become so old and tired that until the recent press on virus activity, even the vandals and the goths had largely lost interest. BBS system operators are the main victims since most conscientious sysops at least briefly test all software before making it available for download. Some sysops have installed power switches in the power line of their hard disk drives so they can "kill" their hard disk while testing a program on one of the floppy drives. Trojans only bite the completely unwary and good backup habits prevent much damage even then. A currently popular trojan horse program is **FLUSHOT4** - an obvious attack on the antiviral program **FLUSHOT**. **FLUSHOT4**, the pretender, does exhibit certain time delay properties and of course erases the **FAT** on the hard drive. It exhibits no replicative behavior at all. It is not a virus. There never was a legitimate **FLUSHOT4** and the latest legitimate release of this program is **FLUSHOT+**.

Virus are different from trojans in several key respects. First and foremost is their ability to replicate. By definition, a computer virus must be capable of cloning copies of itself into other directories, disk drives, or computer systems to be viable. Secondly, most virus theoretically exhibit a dormant state where detection by casual observation and system use would be unusual. The frightening thing about this is that you may backup your hard drive to an archive. The backup then contains the virus making it impossible to recover your system unless an earlier clean backup was retained. If you were hit with a virus, how far back did it happen????

What viruses are not. Virus programs are not magic. They are programs. They must be run or executed to work. Text files cannot contain viruses. Graphic files cannot contain viruses. Messages cannot contain viruses. If they could, they would be dead viruses because these programs cannot be executed and even if they could no one would ever think to try and execute them. They are data files. It's not that they don't have viruses yet. They never will have viruses.

Viruses do not harm any computer hardware. It is possible in theory for a program to "exercise" a hard disk drive repeatedly and continuously to the point of failure if left completely unattended. Generally, it would need to be unattended for about 3 years with most drive units today but it is very remotely possible. There have been reports of a program that would cause TTL monochrome monitors to burst into flames. Probably a virus. We'll not waste the long distance charges even chasing this story.

Viruses must attach themselves to programs the intended victim might inadvertently run under the mistaken belief that it was a useful program. This is similar to a classic trojan horse scenario. Once activated, the virus is "loose" in the system and unlike trojan horse programs, the virus takes on a life of its own copying itself to other program files. To spread to another computer system, the infected executable program must 1) be transported to a storage device on the new system and 2) must then be executed (run) there.

Because they operate at a very low level, viruses must be very machine specific. Commodore computers cannot catch viruses from Apple computers. The company mainframe is entirely immune to PC viruses. The instructions contained in the viral code are simply meaningless on a foreign system. This is somewhat similar to the disease relationship between men and koala bears. What may be deadly to one is entirely harmless to the other species. Still, the unaffected species could be a carrier. For example, if we had the **flavis waven killer virus** infecting Joe's PC and he uploaded it to an IBM 3090 mainframe computer. The flavis waven virus, no matter how deadly to the PC, is so much harmless data nonsense to the 3090. But if Judy downloads it from the IBM 3090 to her PC, she could look forward to some genuine grief. The 3090 would continue unaware that anything out of the ordinary had happened.

A great deal of the press concerning viruses is largely conjecture of the "what if" variety. And unfortunately, there are those who by virtue of their connection to backup technologies and commercial software stand to gain economically from the perpetuation of the viral scare stories. Face it, software piracy just isn't worth the risk - however remote - of losing your valuable files. And, viruses don't damage your hardware at all. Reformat your hard disk and the virus is gone, gone, gone. The hardware will run fine. You do NOT need to buy a new hard disk drive no matter what anyone tells you. Yes, there have already been victims of this play.

Steve Gibson, columnist for Infoworld magazine, notes a group in Santa Clara California titled the National BBS Society at (408)727-4559 that he assured us with

confident authority had 39 viruses on file. We called the number and talked with John McAfee. John actually is part of a company called **Interpath** that markets the **C4** antiviral program at \$29.95. John told us that several corporations had just been brought to their knees by a virus. We asked which corporations. John assured us that he really didn't want to give out specific company names until they helped them get the plague under control. We asked John if he had actually captured any viruses. He assured us that he had but that they were so virulent that they could infect 10 files in a second and a half and they were afraid to let any loose so he couldn't send me one. He went on to state that several commercial programs were "targets" or programs that viruses were keyed to infect. Which ones John. His reply of course is that giving out specific titles would hurt the companies sales.

John went on to say that big corporations were the real targets and that individuals would never know they had a virus for years yet. They would certainly never show up in our BBS community. We informed John that we had looked at over 60 sightings and that in fact everyone had seen or heard of viruses but we couldn't seem to wrestle down a copy. John explained that all viruses were delayed for years and that it would be 1993 before any of them actually activated (???).

There may be a National BBS Society with a BBS at (408)988-4004. Their voice number is (408)730-6822. Their answering service promised to have them call us. They didn't. The BBS is actually a disconnected number and seems to be down.

We note two things about the viral plague. It seems to be more bacterial than viral and probably of the genus bullock shitus. Secondly, in investigating this story for the past two months we have had enough smoke blown up our skirt to leave us with a pronounced ringing of the ears and a troublesome sinus infection - so far, the only real documented symptom of viral activity in the Denver area.

All that notwithstanding, viruses are plausible, possible, and most terribly frightening. We'll keep an open mind on the virus story if you will. Bob Voorhees maintains an excellent BBS titled **THE PROFESSIONAL SYSTEM** at (303)740-2223 and also shares a beleaguered skepticism. Bob would appreciate the upload of any virus programs or **FIRST HAND** accounts of virus activity. For those terribly enamored of this myth and emotionally outraged that we dare question this popular theme, we merely ask that you try to restrict your vented rage to a dull scream and appropriately demure and civilized letter bombs. That means no water balloons and no fat chicks.

SUPRA MODEM 2400

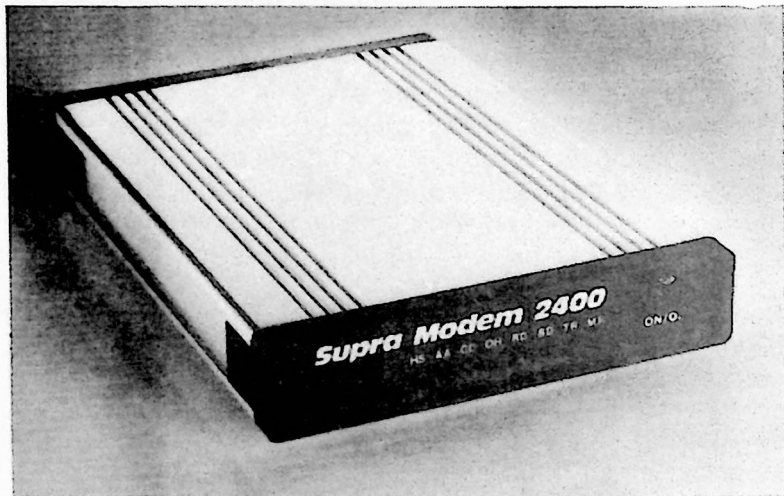
Supra Corporation of Albany Oregon has assembled a delightful little **2400 bps** external modem at a reasonable price. The **Supra Modem 2400** began shipping in November 1987 at a suggested retail price of **\$179**. The unit began life as the **Intel 89024 2400 bps** intelligent modem chip set. This package provides **300/1200/2400 bps** operation in two chips with very little needed in the way of support components. Operationally, it's very Hayes compatible and runs quite cool consuming a mere **3 watts** of power.

The Supra Modem implementation of this chip set has a couple of very nice features going for it. For one thing, the modem is mounted on a single circuit card which slides into a surprisingly heavy-duty extruded aluminum case. The unit is sturdy as a brick bat and about the size of a double deck of bridge cards (**1 x 4 5/8 x 6 1/2** inches). This is much smaller than any other external table top model we've seen. Since the unit is already very cool running, stacking these little modems is easy and effective for those running multiline systems. Stan Snyder, of **ON-LINE STORE** in Ventura California, originally asked us to take a look at this model. He claimed sysops were screaming for these modems for multiline applications such as the **DLX** multiline BBS software they are currently offering. After several weeks of daily use, we can see why.

The Supra features a front panel-mounted power switch. True, a power switch is a relatively unimportant item. Somehow, we seem to do a lot of modem power resets during the course of a day. Modern computer furniture often features narrow little shelves just perfect for holding a modem. Unfortunately, once it's stashed there, you can't conveniently reach the back panel where most manufacturers locate the power switch. With the Supra, it's just not a problem. This feature alone put us in a positive frame of mind concerning the Supra.

We tried the Supra out on a variety of line conditions and we did note some slight noise garble on known poor quality lines and over some long distance connections. This usually amounted to a few check marks on screen and a couple of retransmitted blocks during large file transfers - not at all unusual for low cost models. On local lines, performance was flawless. It executed all Hayes commands reliably and the setup configuration strings were quite ordinary. We used it to distribute the USA Today newspaper each morning to several area BBS over a period of three weeks virtually without incident.

The unit features one of the clearest call monitoring audio speakers we've ever heard. Not symphony quality of course, but compared to the speakers mounted on most modems, the sound of this one was crystal clear. The front panel provides some LEDs that shine through a black rubber mask with cutouts for the various function labels. This was fairly effective viewing the panel straight-on and provided an attractive appearance. But from an angle, with the small size of the characters, it was somewhat difficult to read.



Though documentation was a bit shy of exhaustive, it did cover the essentials and the writing style was lucidly clear and very well directed toward those just starting out in modem communications. Some of the explanations bordered on plain American English - a rarity in any documentation dealing with computer communications.

The bottom line on this modem is that it's inexpensive, durable, and operates well under most conditions. The notably small package, virtually indestructable case, front panel switch, and clear speaker combined with a very attractive price for a **2400 bps** external model, make this modem a keeper here at Boardwatch. Supra also offers models of the **2400** specially designed with cables and software for Amiga, Atari, Commodore C-64/128, and Macintosh computers. Supra Corporation, 1133 Commercial Way, Albany, OR 97321; (503)967-9075. On-Line Store offers the unit for a very attractive **\$159** and has been known to discount that to sysops. On-line Store, 3037 Golf Course Dr. #4, Ventura, CA 93003; (805)650-0188 (voice) or (805)650-0193 (BBS data line). Thanks for putting us on to this one Stan.

SHAREWARE

KEYCLICK

There have been several shareware utilities over the last year or so that cause an audible sound to emit from the system speaker each time you press a key on the keyboard. They've been popular because the keyboards for most clone computers are so abysmal. They've also largely failed. Machines developed over the last three years range in operating speed from 4.77 MHz up to 25 MHz. Whatever sound was programmed to come out of the speaker comes out very differently at a different speed. Further, keyboards, and the sounds they make, are a very subjective issue. Most users have stronger personal preferences about keyboards than any other element of their system. And no two can agree on just what constitutes the right sound or feel.

George Fischer of Temple City California has developed a remarkable little utility titled simply **KEYCLICK**. The program unarchives into **KEYCLICK.EXE**. When you run this program, a very simple menu appears on screen with options to increase or decrease tone and increase or decrease duration. A simple indicator lists a numeric value for each. Using the **D** or **d** key you can increase or decrease duration of the sound and using the **T** or **t** key you can do the same with tonal frequency. Other keys allow you to hear the sound you've just tuned. The result is an infinitely adjustable range of clicks. The sound can be varied from a musical tone to a very unobtrusively dull click depending on your tastes, the speed of your machine, and the settings you select. This makes for an instantly intuitive interface to adjust the sound of the click.

By pressing the **S** key, you create a **KEYCLICK.COM** file. When run, this program simply goes into memory and causes keyclick noises of the type you selected. To readjust, re-run the **.EXE** version.

The program is extraordinarily simple. There is no documentation, no request for a fee, no threats on your immortal soul for not paying. It is easy to use and the keyclicks do add a positive note to typing. Marvelous utility. George Fischer, The Babbage Patch, PO Box 252, Temple City, CA 91780. Available locally from **SNARFQUEST 104/604** at **(303)973-9402**.

SECOND ANNUAL COMPUTER BAZAAR AND FLEA MARKET

SATURDAY, AUGUST 27
NATIONAL GUARD ARMORY
55 SOUTH PATOMAC, AURORA

10:00 AM to 7:00 PM

TICKETS \$1.50 IN ADVANCE - \$2.50 AT DOOR

SPONSORED BY:

COMM-NET

COL.. COMMODORE COMPUTER CLUB
COLORADO PET USERS GROUP

The second annual computer bazaar and flea market will be held Saturday, August 27, 1988 at the National Guard Armory in Aurora Colorado. This is the largest locally sponsored computer show in the Denver area featuring vendors and displays representing all computer types, brands, operating systems, software, hardware, and accessories including IBM, Amiga, Apple, Commodore, Tandy, and Macintosh. No item too large or small. If you have it and want to sell it, this is the place.

Last year's show drew over 2400 computer enthusiasts from the surrounding area with displays by 44 vendors. Attendance this year is expected to be even higher. Reservations are now being taken for corporate display areas, commercial display space, and individual sales tables at rates beginning at \$25 depending on size and location. Space is limited so register early.

Complete snack bar facilities will be available with food, beer, and soft drinks. Numerous door prizes and show specials will be available.

Address requests for further information, advance ticket sales, or space reservations to:

COMM-NET

676 South Quentin St
Aurora, CO 80012
(303)341-4266

DENVER PC BOARDWATCH

LIST OF AREA CODE 303 ELECTRONIC BULLETIN BOARD SYSTEMS AND ON-LINE INFORMATION SERVICES - JULY 1988

TITLE	PHONE	DESCRIPTION	TYPE	BPS	SOFT	CITY	SYSOP
Adelante 104/93	443-8292	Central/Latin America Social Issues	.IBM	3/12/24	Opus	Boulder	Zhahai Stewart
Aerie, The 104/40	292-3162	Science Fiction	.IBM	3/12	Opus	Denver	Leland Dirks
AmNet On-line 104/65	1-223-1297	Animal Rights Issues	.IBM	3/12	TBBS	Ft. Collins	James Cherry
Arkham Public Library 104/48	444-7686	Tradewars Game/IBM Software 6PM-8AM	.IBM	3/12/24	QuickBBS	Boulder	Neil Beatty
Aurora Chairman	340-1844	City of Aurora Council/Mayor Forum	.IBM	3/12	Chairman	Aurora	City of Aurora
Byte Shop 104/311	794-5065	Jokes / Adult Sections	.IBM	3-96HST	QuickBBS	Littleton	Dan O'Neal
Cable Net Opus	933-9359	Excellent Shareware Library	.IBM	3/12/24	Opus	Lakewood	Ted Gilmore
CBA Information System	329-0159	Continental Basketball Association	.IBM	3/12	TBBS	Denver	???
Chivalry 104/46	761-1634	D&D - Jokes - Tradewars - Chess - QBBS	.IBM	3/12	QuickBBS	Aurora	Dax Davis
Christian Protocol	693-8791	Christian Messages - Bible Text	.IBM	3/12/24	TBBS	Denver	Ken Johansen
Club Micro 104/88	832-5850	*C*Language/Database/Communication Files	.IBM	3-96HST	Opus	Denver	Don Marquart
CMOS	322-4078	Colorado Mountain Operating Systems	.IBM	3-96MIC	Minihost	???	Kevin Truitt
Coco County Airport 104/54	343-6707	TRS Color Computer Support	.IBM	3/12/24	Opus	Aurora	Ron Bihler
Colorado Broadcasters 104/42	572-6256	Commercial Radio Frequency Lists	.IBM	3/12	Opus	Denver	Lynn Osburn
Comm-Post, The	534-4646	Astronomy - Tandy 100/2000 - Jokes	.IBM	3/12/24	TBBS	Denver	Brian Barte
Control Systems	458-6248	IBM/Compables Subscription Board	.IBM	3-96MIC	RBBS	Denver	Lupe Raminiz
CPM SIG INC 104/372	465-1313	Oldest User's Group in Area - CP/M - IBM	.IBM	3/12/24	Fido	Broomfield	Al Lundquist
CSM-SPE Oil Patch 104/59	273-3239	CSM Petroleum Engineering Department	.IBM	3/12/24	Opus	Golden	Max Bordon
Cyber-Zone, The 104/61	860-0126	Science Fiction/USA Today	.IBM	3/12/24	QuickBBS	Denver	Jonathan Wood
Data Bank	494-0167	IBM Messages	.IBM	3/12/24	TCOMM	Denver	Guido Binetti
Day's End 104/20	650-5636	Astronomy Files-Telx/SF Echoes/USA Today	.IBM	3-96HST	Opus	Denver	Chris Day
Denver Central 104/412	758-8720	Trojan List/Sports and Cooking Echoes	.IBM	3/12/24	Opus	Denver	Dana Palmblad
Denver Tech Computer	799-4813	Retail Store - SCO Xenix / C Language	.IBM	3/12	Comm/men	Englewood	Rolf Anderson
Denver Tech Computer	799-9138	Retail Store - SCO Xenix / C Language	.IBM	3-96HST	Comm/men	Englewood	Rolf Anderson
Digger's Dungeon	452-6063	Ghoulis Graveyard Theme	.IBM	3/12	???	Aurora	Grave Digger
Dog House, The	320-0501	IBM/Atari Downloads - FoRem Net Mail	.IBM	12/24	Forem	Denver	Lonnie Shinault
DROID, The	933-1501	On-line Tradewars and Baseball Games	.IBM	3/12/24	QuickBBS	Littleton	Leonard Vandermate
Eagle's Nest	933-0701	General Messages/Downloads	.IBM	3/12/24	QuickBBS	Littleton	Ronald Olsen
Education 2000 104/29	449-9807	Education Issues Kindergarten - 12th	.IBM	3/12	TBBS	Boulder	Roger Salamen
eSoft Support	699-8222	eSoft Inc. TBBS Software Support	.IBM	3/12	TBBS	Aurora	Phil Becker
Eusebia 104/18	430-8376	Christian - Full /KV Bible Downloads	.IBM	3/12/24	TBBS	Federal Heights	Jim Queisner
Excalibur 104/39	497-6051	C Program Files - C Echo Area 5PM-8AM	.IBM	3/12/24	Opus	Boulder	Sleve Roughion
FutureWave BBS 104/57	440-7425	Games / C Language / MIDI 6PM-7AM	.IBM	12/24	Opus	Boulder	Ross Sponholtz
Gay Community 104/19	795-1215	Messages / Downloads for Homosexuals	.IBM	3/12	QuickBBS	Littleton	???
GDP Technologies BBS	673-9470	CoreWars Game/C Language/Great Shareware	.IBM	3/12/24	Wildcat	Lafayette	Tom Gettys
Greater Clifton PCBoard	1-241-1966	Grand Junction MUG - Ham/Packet Radio	.IBM	3/12	PCBoard	Grand Junction	MUG of Grand Junction
Grizzly King	666-0824	Freeware/Colorado Outdoors/Programmers	.IBM	3/12	TBBS	Lafayette	Bob McDuffee
Grotto, The	694-9050	Amiga, Pascal - Ebert Personal Computers	.IBM	3/12/24	TBBS	Aurora	Vincent Veritas
Holiday's Inn 104/507	699-7738	Colorado Backroad Exploring - C Language	.IBM	3/12/24	QuickBBS	Aurora	Steve Holiday
Hostlink Informational Service	755-3174	Laser Printing/Online Sales/Hacker	.IBM	3/12	QuickBBS	Westminster	Charles Schuiten
HP Haven 104/312	427-6976	Tradewars/On-line Games/ 5PM-7:30 AM	.IBM	3/12/24	QuickBBS	Englewood	Mark Willecke
Iguana's Den, The	771-5937	Teen Oriented - Obscene Language	.IBM	3/12	QuickBBS	Fort Lupton	Kevin Meyer
In To The Night 104/31	659-1897	IBM Game Files 9PM-3AM	.IBM	3/12	Opus	Aurora	Kris White
Info-Net BBS	680-1648	Computer's Plus Board	.IBM	3/12/24	RBBS	Aurora	Computer's Plus
Into The Wind 104/63	939-9272	Support for Shamaal Software 10P-11A	.IBM	3/12/24	Opus	Boulder	Dana P'Simer
Investment Lounge	759-3721	Excellent Investment/Financial Topics	.IBM	3/12	TBBS	Aurora	Mark Greve
Isle of Man	447-1942	Gay Community BBS	.IBM	3/12	RBBS	Boulder	???

Lakewood Department of Safety	987-7388	Police Sponsored - Law Enforcement Msgs	IBM	3/12	RBS	Wheatridge	Larry Scheidman
Lodge, The	420-0305	Arvada Quick BBS Board	IBM	12	QuickBBS	Arvada	Harold "Monty" Montrose
Manville Info Services 104/978	978-3946	Business Software / Apple Macintosh	IBM	3/12	Fido	Littleton	???
Master Work, The 104/55	341-6614	Recently Up - General Communications	IBM	12/24	Opus	Aurora	Roy Prickett
Maverick	1-434-4211	Hardware Sales - \$10 Annual Fee	IBM	3/12/24	RBS	Grand Junction	David Fouts
Mekamorphosis	1-772-7229	PCB-Echo Net/260 MB of Files/Online Game	IBM	3/12/24	PCBoard	Lafayette	Tony Ferris
Micro World Infomat	987-2671	RBS-IBM-Commodore-Amiga-Atari 7PM-8AM	IBM	3/12	RBS	Lakewood	Leonard Vandermate
Microlink B 104/108	972-9600	Good Download Library - USA Today News	IBM	3-96HST	TBS	Littleton	Girard Westberg
Microlink C 104/53	455-9600	Professional Computer Sales Co.	IBM	3/12/24	TBS	Denver	John Anderson
Microlink Minus Two 104/204	329-9598	Professional Computer Sales Inc.	IBM	3/12	TBS	Denver	Paul Smith
Mike Hi CUSS 104/614	698-0924	CUSS Computer Use in Social Services	IBM	3-96HST	Fido	Denver	Chuck Mastriani
Mike Hi Tech Fidonet 104/56	973-9338	Fido News/List	IBM	3/12/24	TBS	Littleton	Oscar Barlow
Mike High Net	671-7308	Fido Board	IBM	3/12/24	Fido	Aurora	Dave Miller
Motherboard	1-241-1419	Grand Junction - Good Software PC BOARD	IBM	3/12/24	PCBoard	Grand Junction	Jennifer Dillon
NoName BBS	988-5765	Selected Quality Shareware - New Users	IBM	3/12/24	Minihost	Lakewood	Jon Johnson
Nurse Link 104/52	270-4936	UCHSC School of Nursing	IBM	3/12/24	TBS	Littleton	Chuck Mastriani
Odysseus	988-2133	Armenian Electronics Consultant	IBM	3/12	QuickBBS	Lakewood	Bill Willoughby
OKY BBS	494-0533	Consultant Directory/Desktop Publishing	IBM	3/12/24	QuickBBS	Boulder	Onnig Kouyoumdjian
On-Line Consulting 104/45	449-5251	Boulder Home Grocery Delivery \$5 + 5%	IBM	3/12/24	Opus	Estes Park	Lee Lasson
On-Line Shopping Service	442-5125	Public Psychiatry / AI Themes 6PM-8AM	IBM	3/12	Chairman	Boulder	Pete Dempsey
P2B2 S 104/51	329-3337	IBM PC Jr. Technical Info /Radio Comm	IBM	3/12/24	QuickBBS	Denver	Claude Warren
PCjr-NET 104/904	789-4610	USA Today Newspaper/4 lines/INFO-MAT Mag	IBM	3/12/24	Opus	Englewood	Phil Kaiser
Phoenix TBS 104/739	841-9570	170 Meg - Online Order for CDB Systems	IBM	3-96HST	TBS	Parker	Larry Kayser
Pinecliff 104/28	444-7073	Writers, Lawyers, EDP Auditors	IBM	3/12/24	Opus	Boulder	Craig Baker
Professional System, The	740-2223	Home of Quick BBS Software	IBM	3/12/24	TBS	Littleton	Bob Voorhees
Quick BBS Support Board 104/24	423-3114	Colorado Highway Department - Planning	IBM	3/12	QuickBBS	Arvada	Adam Hudson
R.A.B.I.T.	757-9509	Philosophy/Church of Illumination	IBM	3/12	TBS	Denver	Colorado Dept. Highways
Randolph Society Info Network	665-9152	INFO NEEDED	IBM	3/12	TBS	Louisville	Hal/Fran
Rocky Mountain RBS	750-2107	IBM, Epson Equity, TRS-80 Club Msgs	IBM	3/12	RBS	Aurora	Steve Kornreich
Serendipity	465-3729	Science/Engineering/Turbo Pascal Utils	IBM	3/12	RBS	Littleton	Terry Connolly
Silver Streak, The	790-2534	Hot 386 Micro with Games/ReadMACs	IBM	3/12/24	Wildcat	Littleton	Dennis McKinney
SnapQuest 104/604	973-9402	Christian BBS / Sound Doctrine Church	IBM	3/12/24	Opus	Littleton	John Denny
Sound Doctrine Bulletin Board	680-7209	NOAA Solar Flare Forecast / Advisory	IBM	3/12	TBS	Aurora	Tim Williams
Space Environment Service Cntr	497-5000	Space Exploration Information	IBM	3/12	PBS	Boulder	US Dept of Commerce
Space Network	494-8446	Grand Junction BBS	IBM	3/12/24	TBS	Boulder	Tom Meyer
Squirrel's Nest	1-242-7977	Info on Steamboat Springs Area	IBM	3/12/24	PCBoard	Grand Junction	Allan Worley
Steamboat Information	1-879-6741	MINDS AI TextBase Indexer Support	IBM	3/12	TBS	Steamboat Springs	???
TBS Net 104/23	699-9248	MINDS Online Textbase - USA TODAY	IBM	3/12/24	TBS	Aurora	Phil Becker/eSoft Inc.
Terus Public BBS 104/43	469-7161	Net 104 Coordinator - Lots of Echomail	IBM	3-96HST	Opus	Broomfield	Todd Hill
Terus RegUser 104/44	341-1404	Denver PC Boardwatch/USA Today 10PM-10AM	IBM	3-96HST	Opus	Aurora	Bart Henthorn
The 8th Sea 104/610	252-9235	Trout Fishing / Water Condition Reports	IBM	3/12/24	QuickBBS	Northglenn	Rod Lamping
This End Up 104/30	430-1585	On-line Games	IBM	3/12	Opus	Westminster	Steve Carnes
Trout Unlimited	499-2828	4-line pay service - \$2.40 hourly	IBM	3/12	Fido	Boulder	Ralph Stewart
Twin Peaks PCBoard	1-651-0225	Electronics/Communications 8PM-5AM	IBM	3/12/24	PCBoard	Longmont	Ken Krueger
Unisource	721-6640	Safety - Arson - Hazardous Material	IBM	3/12	Galacti	Littleton	Bill Flowers
Value Line, The	363-0422	Martin Marietta Employees - 5PM-7AM	IBM	3/12/24	Wildcat	Aurora	Chris Millikin
Watchdesk, The 104/66	450-0822	Computer Discount On-line Store/Amiga	IBM	3/12/24	QuickBBS	Thornton	Emil Hurdlebrink
Waterton Computer Club	977-7096	Amiga Messages and Downloads	Amiga	3/12/24	RBS	Denver	Ken Beaudrie
C.D. Players	825-0419	Amiga System Emulating IBM-XT	Amiga	3/12	TBS	Denver	Tony Scott
Greenline	429-7145	Apple Programming/Messages	Apple	3/12/24	BBS-PC	Broomfield	Phil Green
Outer Limits BBS, The	1-221-5107	Aurora Public Schools Network	Apple	3/12	OPUS	Fort Collins	Gary Whicker
Aces High	329-6579		Apple	3/12	GBBS	Denver	Glenn Hayhurst
APSNat	693-6737		Apple	3/12/24	GBBS	Aurora	Columbia Middle School

DENVER PC BOARDWATCH

LIST OF AREA CODE 303 ELECTRONIC BULLETIN BOARD SYSTEMS AND ON-LINE INFORMATION SERVICES - JULY 1988

TITLE	PHONE	DESCRIPTION	TYPE	BPS	SOFT	CITY	SYSP
Box's Cabin, The	424-9185	Apple / Technical Notes	Apple	3/12/24	Protree	Arvada	Kent Roberts
C.A.C.H.E.	745-4960	Apple / Compatible Home Enthusiasts	Apple	3/12/24	GBBS	Denver	???
Cemetery BBS, The	980-9413	PT Special/Games/40 MB Downloads	Apple	3-96HST	GBBS	Lakewood	Steve Feiler/Levithan
City Morgue, The	442-8498	Necromaniacal Fixation With Stiff Bodies	Apple	12/24	GBBS	Boulder	???
Club House, The	756-9134	RP Games - Golf Format - Messages	Apple	3/12	GBBS	Denver	Pinsetter
Code 5150	696-6673	Lunatic Discussions / Crazy People	Apple	3/12/24	GBBS	Aurora	Chris Thiges (Grunt)
Cutting Board, The	427-2413	60 MB Apple Software and Messages	Apple	3/12/24	GBBS	Lakewood	Cutter
Dark Side of the Moon	469-3437	Matchmaking / Dating for Teens	Apple	3/12	Protree	Broomfield	Marc Anderson
Denver Deaf-Net	989-9245	Hearing Impaired/Computing	Apple	3/12	Protree	Lakewood	David Sheneman
Discovery, The	449-8946	Music / General Messages	Apple	3/12	Alphall	Denver	???
DJ	789-0500	Galactic Conquest Game On-line 40 MB	Apple	3-96HST	GBBS	Englewood	David Metzel
Funny Farm	989-0915	Apple Only BBS	Apple	12/24	???	Lakewood	???
GateKeeper, The	755-4210	Gateway High School/Teen Interests	Apple	3/12/24	GBBS	Aurora	Steve Brothers
Genesis Project	287-8267	Apple II General	Apple	3/12/24	Protree	Commerce City	Gene Humbert
Greeley-Com-Net	1-351-8861	Modern Users Board	Apple	3/12/24	GBBS	Greeley	Lowell Shatraw
Hollows, The	428-0372	Smoke Signal Software/PRIME BBS Support	Apple	3/12	Protree	Denver	Vince Cooper
L&L Support	420-3568	Primary GBBS Pro Software Support BBS	Apple	3/12/24	GBBS	Arvada	Lance Taylor-Warren
Last Chance BBS	690-0194	Enterlaining Logon Questionaire	Apple	12/24	GBBS	Denver	Captain Ozone
LES-COM-NET	233-5824	Lesley College Communications Network	Apple	3/12	GBBS	Lakewood	George Willett
Mom's BBS	690-4913	General Message/Socializing	Apple	3/12	ALFA-III	???	???
NCC 1701 Enterprise	287-6732	Star Trek Theme	Apple	3/12/24	Protree	Commerce City	???
Next Generation	425-6235	On-line Games	Apple	12/24	Protree	Golden	Tony ???
Odyssey III	691-0169	Adult(18) / Sex Oriented 5PM-8AM	Apple	3/12	GBBS	Denver	Sundance
Playhouse	286-7399	Adult / Jokes / Sexual Themes	Apple	3/12	Protree	Denver	???
S.O.B. Lanes, Inc.	452-6902	Apple Board with Bowling Theme	Apple	3/12	GBBS	Westminster	Simon
Sheridan & Associates	935-1489	Buy / Sell / Trade - Chess History	Apple	3/12	GBBS	Denver	Ken Sizer
Timberline Saloon	798-1207	Apple II - Foul Language a Specialty	Apple	3/12	GBBS	???	Sam Walsh
Trekker World	745-9530	Star Trek Fanzine 7AM-10PM	Apple	3	GBBS	Aurora	Robert Morgan
Four Wheeling BBS, The	469-4954	Jeeping / Camping / Outdoors	Atari	3/12	Forem	Broomfield	John Ferguson
Generic BBS	1-857-6881	Titanic Historical Society Information	Atari	3/12	BBS Exp	Fort Lupton	L.A. Sneringer
Millie High Forem	431-1404	Outstanding Atari ST Database - HST 9600	Atari	3-96HST	Forem	Arvada	???
Mycroft	777-8898	Horizon Computer/National Atari BBS List	Atari	3/12	TODAMIS	Denver	Phil Michaelson
Predacon	988-6886	Atari 8 bit / ST with 10 MB	Atari	3/12	Carla	Lakewood	Brad Baumbach
Ron and Shannons BBS	978-0298	Atari Support 5.4 MB XE 130	Atari	3/12/24	OASIS	Englewood	Ron/Shannon Sellers
Skyline Computers	457-0320	Atari ST Support, Files, etc.	Atari	3/12/24	Forem	Denver	Dave Lloyd
Vault, The	796-0539	USAF/ZMAG Member	Atari	3/12	Forem	???	???
White Runes of Tinuviel	972-8566	Tolkien Subjects/Dungeons and Dragons	Atari	3/12	STadel	Littleton	Andy Strashaim
ZAPI	367-4103	Atari/ST/8 Bit	Atari	3/12	Oasis	Aurora	???
Info Zone, The	988-2133	General Discussion/File Transfers	C-128	3	C-Net	Lakewood	Bill Willoughby
Phasar	745-4805	Teen Conversation - Advice Column	C-128	3/12	C-Net	Aurora	Roy Rush
Regimental Headquarters	375-9556	Commodore - Military Theme	C-128	3/12	C-Net	Denver	Bob Greear
Albuquerque Starport	494-7224	Commodore Network Systems International	C-64	3/12	C-Net	Boulder	Greystoke Mindmaster
Colorado Commodore Club BBS	751-3448	Commodore Computer Info	C-64	3/12	C-Net	Northglenn	???
Comm-Net Information Service	366-7177	C-64/C-128/Amiga Info-Dnlds-Messages*	C-64	3/12	Custom	Aurora	Tele-Net Inc.
Comm-Net Information Service	366-2341	Excellent Info for Commodore Products*	C-64	3/12	Custom	Aurora	Tele-Net Inc.
Comm-Net Information Service	340-2473	C-64/C-128/Amiga Info-Dnlds-Messages*	C-64	3/12	Custom	Aurora	Tele-Net Inc.
Comm-Net Information Service	366-2744	C-64/C-128/Amiga Info-Dnlds-Messages*	C-64	3/12	Custom	Aurora	Tele-Net Inc.

Comm-Net Information Service366-3898
 Enterprise320-6470
 Hack Shack688-8406
 Ice Palace494-4934
 Laboratory BBS/SUPERTAC287-5274
 Mailbox BBS427-0725
 Nunnery, The467-1240
 Phone Connection426-7969
 Realm, The937-0215
 Spam Mania423-0348
 Vern's Terminal Exchange433-1150
 Computer Know How279-0224
 Electronic Locksmith RCP/M698-1623
 Fantasy Mountain PBBS278-8369
 Career Connection/DRUG671-0801
 NBS Automated Computer Time494-4775
 Mile High Epsom User Group BBS752-2943
 Dialamatch 118/The Brokerage796-9721
 Experience Software798-0792
 Den HUG331-0982
 World Peace PBBS320-4822
 HP-BBS 104/341-229-9719
 Boulder MAC Maniacs 104/49530-9544
 LaserWriting Desktop Service741-4122
 Mile High Mac Meet758-9159
 Publishing Resources Inc.442-2011
 Radscan1-675-3214
 Radscan1-675-3225
 Radscan1-675-3326
 Boulder Public Library System444-2057
 Boulder Public Library System444-2074
 C.A.R.L. Denver830-1548
 C.A.R.L. Denver830-1547
 C.A.R.L. Denver830-0519
 C.A.R.L. Denver830-1546
 C.A.R.L. Denver830-1165
 Kings Bench 104/615377-6725
 Blue Planet979-7299
 Minds of Mines (MOM) BBS273-3989
 Niteline PBBS277-1447
 Teleboard1-678-1617
 Controller Board/TBBS Island690-9423
 Crossroads499-0457
 Crossroads989-8397
 Dinosaur Board1-652-3695
 King's Market Bookshop665-6091
 Photo Tech781-1079
 PSINet985-2634
 Alpha BBS/intercomex367-1935
 Temple of Doom771-9523
 GLOBAL Information286-7914

Service Jokes/Weather/Sports/Database *C-643/12
 StarTrek Theme with 3.6 MB SoftwareC-643/12
 CommodoreC-643/12
 Commodore Board with Chilly ThemeC-643
 Commodore with Laboratory ThemeC-643/12
 Ham Radio/Sports/Swap/Adult JokesC-643
 Foul Language - C-64 BBS ListC-643/12
 CommodoreC-643/12
 Royal Theme - Complete with KingC-643/12
 Areas Longest Logon MessageC-643/12
 Commodore Messages/Downloads/AdsC-643/12
 Hard Disk Installation / Tech SupportC-643/12
 50M Downloads (CPM & MS-DOS)C-643/12
 Deaf and Handicapped Issues ASCII TTYCP/M3/12/24
 Job/Resume/Denver Rainbow Users 7PM-7AMCP/M3/12/24
 ACTS - Sync PC Clock to NBS Atomic ClockDEC1003-96HST
 MHEUG Club BoardEPSON3/12/24
 Adult MatchmakingFranklin3/12/24
 Franklin MessagesFranklin3
 Denver Health/Zenith User GroupHeath3/12
 Current Events, Politics, RCP/MHeath3/12/24
 Jokes, Amazing but True storiesHP-Vectra3/12
 Apple Macintosh Messages and FilesMAC3/12
 Laser Printing/Scanning/Linotronic 300MAC3/12
 Denver Macintosh Users GroupMAC3/12
 Laser Printing/Publishing/LinotronicMAC3-96HST
 Enter RADSCAN as passwordPDP-11/453/12
 Rangely PDP11 BBS Multiline - GamesPDP-11/453/12
 Password RADSCAN -PDP-11/453/12
 Library ResearchTandem3/12
 On-Line Card Catalog - Member C.A.R.L.Tandem12
 Colorado Association Research LibrariesTandem3/12
 Colorado Association Research LibrariesTandem3/12
 Colorado Association Research LibrariesTandem24
 Colorado Association Research LibrariesTandem3/12
 Colorado Association Research LibrariesTandem3
 Compatible Computer Info ExchangeTANDY10003/12/24
 Space Wars GameTandy20003
 CSM Artificial Intelligence/GeotechnicalTI3/12/24
 Texas Instruments - Lists 193 TI BBSTI 99/4A3/12
 Longmont Weather Advisory Service 7E1TI 99/4A3/12
 Computer Supplies - Online SalesTRS3/12
 DiscussionTRS3/12
 DiscussionTRS3/12
 Obsolete Computer Support/Adventure GameTRS3/12
 Books, Writers, On-line Adventure GamesTRS3/12
 TRS 80 / HAM / Video / CameraTRS3/12/24
 Parapsychology / Near Death ExperiencesTRS3/12
 Enter ALPHA - Ham Radio/Space TopicsUnix Mini3/12
 INFO NEEDEDunknown3/12
 Fee Subscription / Software DatabaseVAX3/12

CustomAuroraTele-Net Inc.
 C-NetDenverMr. Spock
 C-NetCastle Rock???
 C-NetBoulderSnowbird
 C-NetDenverProfessor Beaker
 C-NetWestminsterRichard Miller
 C-NetArvadaThe Nun
 C-NetWestminsterThe Lineman
 C-NetLakewoodBob Hennessy
 C-NetArvadaSpam-Master
 IvoryDenver???
 ZBYEGoldenJohn Holmgren
 PBBSLittletonSteve Ekwall
 PBBSGoldenSteve Shockley
 FidoAuroraJim Turner
 TBSBoulderNatl. Bureau of Stds.
 DYMEnglewoodDale Bucknam
 NetworkAuroraBob Simpson
 PBBSWheatridgeExperience Software
 PBBSDenverLarry Means
 TBSFort CollinsBucky Carr
 GBBSLouisvilleRob Diehl
 RedRyderDenverEd Fenner
 WWIVDenverBill Wright
 RedRyderDenverJohn Taylor
 RSTS9.4Rangely???
 RSTS9.4RangelyJohn Henderson
 RSTS9.4RangelyJohn Henderson
 CustomBoulderEyring Research
 CustomBoulderEyring Research
 CustomDenverN/A
 CustomDenverN/A
 CustomDenverN/A
 CustomDenverN/A
 FidoDenverRalph Allison
 ???LittletonTom Nielson
 TigerGoldenJoe Applegate
 ParadigmGoldenKeith Amann
 TIMCLongmontEric Steenburn
 TBSAuroraMike Hastings
 TBSLakewoodMark Bradford
 TBSLakewoodMark Bradford
 TBSNiwtChris Anderson
 TBSBoulderJim Burt
 TBSEnglewoodJim Gerritz
 TBSDenverWilliam Tedder
 UNaXcessDenverCyro Lord/Robert Brumley
 ???Englewood???
 CustomDenverJim Comstock

Denver PC Boardwatch
5970 South Vivian Street
Littleton, CO 80127

BULK RATE
US POSTAGE
PAID
LITTLETON, CO
PERMIT NO. 290

Last Issue: November 1988
Chris Anderson
8160 Rye Court
Longmont, CO 80501

S

CONTENTS

Adjustable Keyclick Software	11
Cable and Switch Resource	4
Calling Party Identification	4
Cellular Car FAX	2
Census Data Available on Disk	3
Comm Program Features MNP Protocol	5
Commodore 64 Support Service	5
Cray Research Opens Springs Plant	1
Dept. of Education BBS - Toll Free	6
Everex Announces Six MIPS PC	1
Hayes ISDN PC Card	2
Hayes Modem Sysop Discount Program	3
INTEL Product Support BBS	7
Kings Bench BBS	6
Long Distance Rate Comparison Software	4
Maxtor Erasable Compact Laser Disk	1
MCI BBS - Toll Free 800	7
Microcom QX Modem Series - MNP 8/9	3
Naval Aviation BBS - Washington	6
NYSE Directory on Disk	3
OSI Closer to Standard	5
PC Magazine On-line Service	4
PC Pursuit Expands to 33 Cities	1
Portal Offers 456 USENET Areas	7
R:Base User Group BBS	7
Send FAX Via AT&T E-Mail	1
Stock Market Financial News	2
Super SupraModem 2400	10
USA Today Newspaper on Local BBS	2
Verified List of 198 Local BBS	12
Viruses	7

TO SUBSCRIBE:

Denver PC Boardwatch is published monthly at an annual subscription rate of \$28 - a savings of nearly 25% off the newsstand price of \$36. To get the most accurate list of bulletin board systems available in area code 303, as well as telecomputing news and developments from across the nation, send your subscription to:

DENVER PC BOARDWATCH
5970 South Vivian Street
Littleton, Colorado 80127

Or call (303) 973-6038 (voice) to charge your subscription to your MasterCard or Visa.